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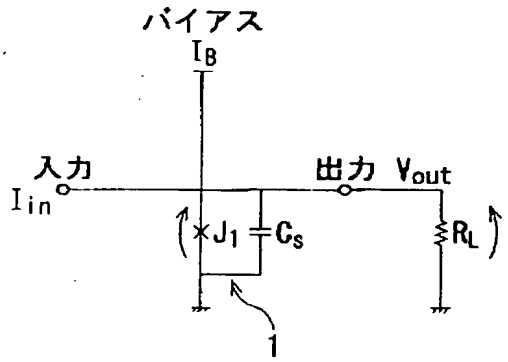
(54) SUPERCONDUCTING JUNCTION AND SUPERCONDUCTING CIRCUIT

(57) Abstract:

PROBLEM TO BE SOLVED: To obtain a superconducting junction which can be operated at a fast speed by low energy by making an effective Mc Cumber coefficient which depends on electrostatic capacity of a capacitor part larger than a specified value and making an operating current flowing to a junction part during generation of a voltage in a junction part larger than a minimum current value which can maintain a voltage.

SOLUTION: In a latch-type circuit, a high temperature superconducting junction can provide hysterisis to its I-V characteristic by connecting a capacitor part Cs to a junction part J1 in parallel. Furthermore, a Mc Cumber coefficient βc is adjusted and the relation between an operating current Iop flowing to the junction part J during generation of a voltage of the junction part J and a minimum current value Imin which can maintain a voltage is also adjusted to surely develop hysterisis. The Mc Camber coefficient βc is featured by hysteresis characteristic of a Josephson junction βc=2πIcCR2/ϕo. Here, Ic is the superconducting current, C is the electrostatic capacity and ϕo is the magnetic flux. When βc>1, hysteresis develops.



ラッチ型回路